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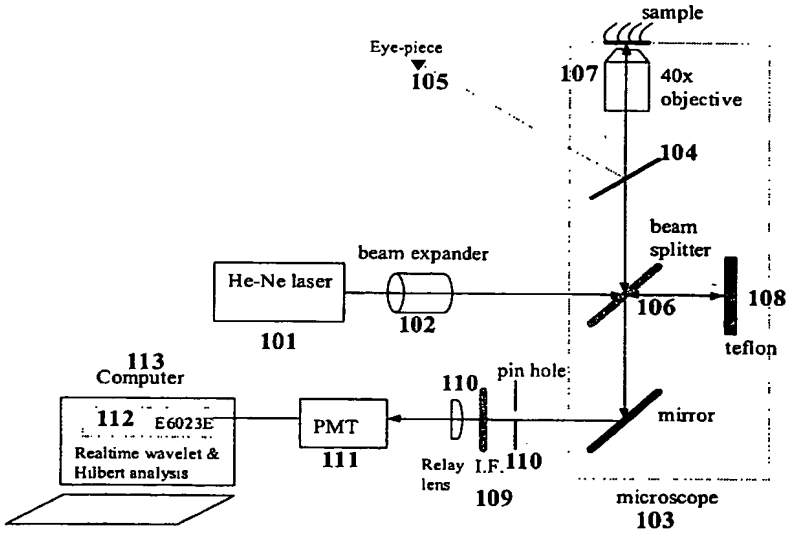
[Continued on next page]

(54) Title: A CONFOCAL MICROSCOPE SYSTEM FOR REAL-TIME SIMULTANEOUS TEMPORAL MEASUREMENTS OF METACHRONAL WAVE PERIOD AND CILIARY BEAT FREQUENCY



(57) Abstract: The present invention relates to a method and system that enables continuous real-time analysis of both ciliary beat frequency and metachronal wave frequency from a single spot (107) in excised native ciliated epithelial tissues as well as in primary and subsequent epithelial cultures. Such method and system utilizes the concept of time-scale wavelet analysis and Hilbert Transformation (112) for backscattered light derived from a confocal (conjugate) spot on the moving cilia. This light contains inherent high and low frequency components corresponding to CBF and MWF.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/09504

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G01B 9/02
US CL : 356/450
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 356/450

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,847,456 B2 (YANG et al) 25 January 2005 (25.01.2005) see entire document	1-8
A	US 6,201,608 B1 (MANDELLA et al) 13 March 2001 (13.03.2001), see entire document	1-8

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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INTERNATIONAL SEARCH REPORT

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Continuation of B. FIELDS SEARCHED Item 3:
EAST
search terms: microscope, microscopy, backscatter, frequency, beat, real-time